

DEPARTMENT OF THE ARMY  
SAVANNAH DISTRICT CORPS OF ENGINEERS  
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SAVANNAH, GEORGIA 31402-0889

DISTRICT PAMPHLET  
NO. 1130-2-23

6 January 1997

Project Operations  
SAFE CLEARANCE PROCEDURE FOR CONTROL OF HAZARDOUS ENERGY

1. PURPOSE. To provide programs and procedures to safeguard personnel whose duties require them to work on or near any system that produces, uses, or stores hazardous energy. These programs and procedures are mandated by law and are necessary to prevent personal injury and damage to resources.

2. APPLICABILITY. This regulation is applicable to all Savannah District team members working at Savannah District operating projects, i.e., projects managed by Operations Division, and is effective immediately.

3. REFERENCES.

a. 29 CFR Part 1910.269, "ELECTRIC POWER GENERATION, TRANSMISSION, AND DISTRIBUTION;" 1910.333, "WORK PRACTICES STANDARD."

b. EM 385-1-1, "CORPS OF ENGINEERS HEALTH AND SAFETY MANUAL."

c. ANSI C2, NATIONAL ELECTRICAL SAFETY CODE.

d. ER 385-1-31, "SAFETY AND OCCUPATIONAL HEALTH, THE CONTROL OF HAZARDOUS ENERGY."

4. DEFINITIONS. Definitions in Appendix "A" include those in ER-385-1-31 (1994 version) and those added by the Savannah District Safe Clearance Committee.

5. PROCEDURES.

a. Before government or contractor personnel perform any servicing or maintenance on a system where the unexpected energizing, start up, or release of potential, kinetic, or stored energy could occur and cause injury or damage, the system shall be isolated in accordance with

DP 1130-2-23  
6 Jan 97

the procedures of this pamphlet. Personnel and resources shall not be considered protected until hazardous energy control procedures have been implemented.

b. All "Authorized Individuals" working within and around the project must be thoroughly familiar with this policy and the most recent ER 385-1-31.

## 6. RESPONSIBILITIES.

a. Responsible Official shall:

- (1) Be responsible for their facility's hazardous energy control program.
- (2) Prepare a list of "Authorized Individuals" and clearly state type of clearance they may hold.
- (3) Designate the "Issuing Individuals."
- (4) Provide for annual training on safe clearance procedures.
- (5) Prepare and maintain a list of the equipment which require implementation of hazardous energy control procedures.
- (6) Arrange all outages and schedules with the appropriate authority.
- (7) Designate in writing, certain site specific equipment (listed in Appendix E) that may be operated or removed from service without a safe clearance under the "Switching Permit" program.

(The "Switching Permit" program is optional and may be used only if approved by a local facility policy memorandum signed by the "Responsible Official.") Note: see paragraph 16 for more details on "Switching Permits."

(8) Establish accounting procedures to track placement, movement, and removal of "Temporary Protective Grounds."

b. Issuing Individual shall:

- (1) Coordinate with appropriate individuals and power agencies to ensure the isolation of equipment.
- (2) Prepare or delegate the accurate preparation of the "Safe Clearance Order Sheet."

(3) Prepare the “Switching Order” for the safe clearing and lockout/tagout of equipment.

(4) Know estimated length of time equipment will be out of service.

(5) Know estimated length of time to return equipment to service in an emergency.

(6) Keep informed of work progress on cleared equipment.

(7) Issue clearances once clearing process is completed.

(8) Log all clearance orders in the Station Log in red ink. This shall include time of issue and time of release.

(9) Log all occurrences of “Switching Permits,” if used at Project, in the Station Log (see paragraph 16).

c. Authorized Individual (person receiving clearance) shall:

(1) Ensure that all appropriate auxiliary cards have been properly placed, initialed, dated, and clearance issued before performing any work.

(2) Ensure that physical barriers (lockout devices) on energy isolating devices are placed as needed.

(3) Ensures that protective grounds are placed as necessary for personal protection or equipment safety.

(4) Ensures that no work is allowed on devices used to isolate equipment or define clearance boundaries.

(5) Release clearances in a timely manner after completion of work or testing.

(6) Transfer clearance when practical, if knowingly will be off project during normal scheduled work hours.

(7) For periods of one normal workday or less, or non- regular work periods, be able to grant permission to allow other “Authorized Individuals” to work under his/her clearance (see note). Clearance holder need not be on project. Prior arrangements in person with the “Issuing Individual” are expected, however, telephone permission from off project may be acceptable. Limitations for work to be performed may be specified by the clearance holder.

6 Jan 97

Note: Clearance holders allowing others to work under his/her clearance assume full responsibility for that person's safety. Personnel working under a clearance shall keep the clearance holder informed of their status and notify him/her when their work is completed.

(8) Keep "affected personnel" informed of the status of the clearance. Keep the "Issuing Individual" informed of conditions and status of the work. Equipment testing shall require prior coordination with the "Issuing Individual" and other clearance holders if overlapping clearances are involved. The clearance holder requesting equipment test operation is responsible for safety of personnel and equipment during test or requested operation of cleared equipment.

d. Authorized Individual (person clearing the equipment ) shall:

(1) Check the accuracy of clearances and sequence of tagging.

(2) Perform the switching, operating, valving ,and placing of clearance tags and lockout devices to isolate all project equipment worked on with the exception of:

(a) Equipment located in control room. (All switching in control room will be performed by Operator on Duty or his representative.)

(b) Equipment under "Temporary Lift" and test/repositioning status.

(3) Follow logical and proper clearance sequencing when clearing equipment.

(a) Stop clearance process and confer with "Issuing Individual" when conditions are found different than expected by the intentions of the clearance request.

(b) Stop clearance process and confer with "Issuing Individual" when he/she has any questions or doubts concerning the adequacy of the clearance being placed.

(c) Initial and indicate time of placement on auxiliary hold cards.

(d) Place appropriate warning signs and barriers.

e. Affected Personnel (individuals of crews working under the clearance holder) shall:  
Be responsible for satisfying themselves that the equipment they are to work on is de-energized or in a safe condition, and the clearance has been issued before work progresses.

f. Communications:

(1) Whenever practical, in-person communications shall be used for the following hazardous energy control operations:

- (a) Requesting and releasing safe clearances.
  - (b) Installing and removing “Temporary Protective Grounds.”
  - (c) Request for temporary removal and reinstallation of lockout or tagout devices.
- (2) When in-person communications are not used, other acceptable means are:
- (a) Telephone
  - (b) Radio
  - (c) Written
- (3) All oral communications including those made in person, shall be repeated by the second person to the first person.

7. AUTHORITY - ISSUING INDIVIDUALS/AUTHORIZED INDIVIDUALS:

a. Issuing Individual (person issuing a clearance):

- (1) The Power Plant Shift Operator on duty has authority over all powerplant and remote station equipment in operation or in standby mode.
- (2) All clearances that would affect powerplant availability/generation shall normally be authorized by the Power Project Manager. However, in the absence of the Power Project Manager, the “Issuing Individual” shall have that authority, providing the next proper authorities have been notified.
- (3) The “Issuing Individual” and the type clearances they may issue, will be designated in writing by the “Responsible Official.”
- (4) May delegate the clerical work and labor of the clearance process. Delegation however, shall not relieve the Operator of any responsibility to be fully informed at all times of the current status of the Project, and for the safety implied by the conditions established by the clearances or personal lockout/tagout.
- (5) Once a clearance operation has begun, the “Issuing Individual” shall not allow any change of the status of the tagged equipment. However, in the event of an emergency, the clearance requester shall be notified and the clearance suspended.
- (6) Only the Duty Operator (Issuing Individual) may issue a clearance.

6 Jan 97

b. Authorized Individual receiving a clearance: Has authority over the facility or equipment which has been cleared, from the time he accepts the clearance, until he releases the clearance.

c. Affected person/personnel doing the work: The person working under a clearance issued to an "Authorized Individual" has the right to refuse to perform work he/she considers unsafe until the condition is corrected.

## 8. REQUESTS FOR A CLEARANCE.

### a. Authorized Individual shall:

(1) Submit to the "Issuing Individual" a request for a clearance sufficiently in advance to permit completion of all arrangements and operations prior to the proposed clearance time.

(2) Ensure a complete understanding between himself and the "Issuing Individual," and the extent and limitations of the clearance. The "Issuing Individual" must know the reason for the clearance and the extent of the work to be performed in order to judge the adequacy of the clearance. In this respect, cooperation and exchange of information between all concerned is mandatory.

### b. Issuing Individual shall:

(1) Upon receipt of a clearance request, determine if the proposed request covers the type, magnitude, and hazards of the energy to be isolated, and that the scope of the proposed clearance is adequate for the work to be performed.

(2) Ensure that the "Authorized Individual" has knowledge of the type, magnitude, and hazards of the energy to be controlled and the limits of the controlled area.

### c. Authorized Individual clearing equipment shall:

(1) Place all clearance tags on all requested energy isolation devices. Isolation points, which will not accept lockout devices, shall be secured with the tag cable tie in such a manner that the tag attachment tie, where possible, is intertwined within the energy isolation device so as to inhibit movement of the device.

(2) Keep the "Issuing Individual" informed as to the status of the clearance being placed, report any discrepancies in the process or equipment being cleared, and any malfunction of equipment being cleared.

## 9. ACCEPTING A CLEARANCE.

a. Authorized Individual shall:

- (1) Be responsible to check the protection provided and ensure that it is adequate for the work to be performed.
- (2) Ensure the correct application of lockout devices at energy isolation points.
- (3) Keep the "Issuing Individual" informed of work status.
- (4) Become fully responsible for the equipment covered by the clearance until clearance is released to the "Issuing Authority."
- (5) Be certain that all switching has been performed, all tags have been properly placed, initialed, and dated before accepting the clearance.
- (6) Accept and release clearances in person if possible. In the event personal contact is impossible between the "Issuing Individual" and the "Authorized Individual," other means of communication may be used provided these means are approved by the Power Project Manager.
- (7) Be responsible to inform all affected personnel working on the equipment, of the status of the clearance before work starts.
- (8) Be responsible for notification of grounding locations to the "Issuing Individual."

b. Issuing Individual shall:

- (1) Be informed by "Authorized Individual" that all clearance tags were properly completed and placed by "Authorized Individual."
- (2) Be responsible that all records are correct and complete, and that the clearance issue time is logged in the station clearance log.

10. LOCKS, KEYS, AND LOCKING DEVICES:

a. The locks and keys used shall be standardized within the facility.

b. Locks and keys:

- (1) Are controlled and issued by the "Issuing Individual" unless otherwise specified by the "Responsible Official."
- (2) Locks that normally exist on lockable pieces of equipment will not be color coded.

(3) A key for the lock issued may remain in the possession of the “Authorized Individual” during the clearance at the option of the “Responsible Official.”

(4) The “Responsible Official” will have a master key to fit all locks.

c. Multiple Type Locking Devices:

(1) Are controlled and issued by the “Issuing Individual” unless otherwise specified by the “Responsible Official.”

(2) Are used for overlapping clearances.

(3) Will meet OSHA and ANSI standards.

(4) May be installed on normally locked equipment.

(5) Steel chains may be used as multiple locking devices where appropriate.

11. LOCKING PROCEDURES:

a. Procedures for the use of locks will be as follows:

(1) All lockable points of isolation shall be locked using an approved lock.

(2) One lock per point of isolation unless overlapping clearances are in effect.

(3) When Contractor or Hydropower Section personnel require locks for their clearance, they shall be last on, first off and shall be placed and removed by a plant “Authorized Individual.”

b. Group Lockout and Tagout:

(1) When a crew participates in “Group Lockout and Tagout,” each affected individual will sign the “Safe Clearance Request, ENG Form 1927-R” verifying he or she understands the details of the job, the energy isolation devices actuated, and the lockout or tagout devices installed.

(2) Personal locks will not be utilized.

12. TEMPORARY REMOVAL OF LOCKOUT OR TAGOUT DEVICES:

a. In situations where lockout and or tagout devices must be temporarily removed from the energy isolating devices and the system energized for testing or repositioning purposes, the



work shall be fully coordinated with the "Issuing Individual." If more than one clearance holder is involved or there is a "overlapping" of clearance protection, all responsible parties shall coordinate the operation to ensure the safety of all employees. It is the "authorized clearance holder's" responsibility to ensure that all personnel are informed of the proposed testing or repositioning of the equipment and are well clear of the area. Once the lockout/tagout devices have been removed, the designated representative of the "Issuing Individual" will perform all switching, valving, and operating of the equipment. When testing and/or repositioning of equipment is completed, each clearance holder will reattach his/her lockout device to the clearance isolation points. Clearance holder(s) shall verify clearance status before allowing work to continue in affected area.

b. When cleared equipment is in the "test" or "repositioning" status, it shall be operated under the direction of the clearance holder(s) and with the permission of the "Issuing Individual."

c. Isolation points which have been energized for "testing or repositioning" shall be returned to clearance status before the end of the working shift, unless specific agreement is reached between the clearance holder(s) and the "Issuing Individual" and such agreement noted in the station log.

### 13. CHANGE OF CLEARANCE STATUS:

a. Any systems required to remain energized following testing or repositioning of equipment shall have the lockout/tagout devices removed from the isolation points. Isolation tags and locks will be returned to and held by the "Issuing Individual" until the clearance is released.

b. If it is discovered that the protection of a clearance that is in effect is not sufficient in scope to meet the need for safe working conditions, or if it is determined after initial inspection of the equipment under clearance that additional work will be required, additional isolation points may be added to the original clearance. These points shall have sequential numbers assigned to them and additional lockout/tagout devices added as necessary. The request, preparation, lockout/tagout, and acceptance sections of this procedure are followed when additional isolation points are added to a clearance.

c. All equipment operation shall be carried out by the "Issuing Individual" unless permission is expressly granted to others by the "Issuing Individual."

### 14. RELEASING OF CLEARANCES:

a. Normal:

6 Jan 97

(1) Clearances must be promptly released by the clearance holder upon completion of work. Only the authorized clearance holder can release his/her clearance under normal situations. (See releasing of clearances under abnormal conditions.)

(2) Before lockout/tagout devices are removed and energy restored to the equipment, the "Authorized Individual" (clearance holder) shall be responsible to ensure that the work area has been cleared of all nonessential items and that the equipment and its components are operationally intact.

(3) The clearance holder shall check the work area to see that all employees have been informed and removed or positioned well clear of the equipment being restored to service.

(4) The "Issuing Individual" is responsible to account for all clearance tags removed from the equipment and for making proper entries in the station log noting the time and date the equipment returned to service.

b. Abnormal:

(1) If for reasons beyond his/her control it is impossible for the "Authorized Individual" to effect the release of the clearance, the "Issuing Individual" shall contact the "Responsible Official" and request that he/she assume full responsibility for releasing the clearance. In extreme emergency, if no supervisor is available the "Issuing Individual" may assume the responsibility of releasing the clearance. A signed statement from the person assuming full responsibility shall be completed stating that the equipment has been checked and found ready for service, and can be placed in service without risk of danger to personnel or equipment. This statement shall be attached to the clearance order sheet, and noted in the station log.

(2) The clearance order sheet, and station log book must be personally signed by the clearance holder if possible or the supervisor that released the clearance.

15. TRANSFERRING OF RESPONSIBILITY FOR A CLEARANCE:

a. Normal:

(1) The person releasing responsibility shall:

(a) Advise the "Issuing Individual" and other clearance holders of a pending transfer.

(b) Personally advise the person assuming the responsibility of the clearance coverage.

(c) Advise the person assuming responsibility of the work already performed and the work to be performed, and of any unusual or special conditions that may exist.

(d) Advise the person assuming responsibility of the limits of the clearance protection, and in the case of multiple clearance protection, the names of other clearance holders involved.

(e) Report, along with the new "Authorized Individual" assuming the responsibility of the clearance, to the "Issuing Individual" and both sign the clearance transfer sheet/station log, thereby transferring responsibility to the new clearance holder.

(2) The person assuming the responsibility for the clearance, shall: Locate, and verify, all clearance cards and cross out the 1st person's initials and add his own name before any work can continue.

(3) The Issuing Individual shall:

(a) Note in the station log the clearance transfer by showing the 1st person releasing, and the 2nd person accepting the clearance.

(b) Fill in the clearance main hold card and clearance order sheet to indicate the transfer of responsibility.

b. Abnormal:

(1) If extraordinary conditions develop to make it impossible for the person holding a clearance to effect a transfer, the "Issuing Individual" shall coordinate with the Power Project Manager to assume full responsibility for the clearance and effect a transfer either to himself, or to another "Authorized Individual" by a signed statement from the Power Project Manager.

(2) The Issuing Individual shall:

(a) Note in the station log the clearance transfer by showing the 1st person releasing, and the 2nd person accepting the clearance.

(b) Fill in the clearance main hold card and clearance order sheet to indicate the transfer of responsibility.

#### 16. SWITCHING PERMITS/PROCEDURES:

a. "Switching Permits" are authorized and can be used if:

6 Jan 97

(1) The “Switching Permit” program is Authorized and site tailored by the “Responsible Official.”

(2) The equipment is listed in Appendix F (equipment will be site specific).

(3) Authorized by and coordinated through the “Issuing Individual.”

(4) Only used during one shift.

(5) Only on circuits of 480 volts or less.

(6) Of a type that exposure to unexpected energizing or startup of the equipment is controlled by a device (such as plug and cord connection) under the exclusive control of the employee performing the work.

(7) Easily isolated such that the “Authorized Individual” can exercise close control over the isolation points.

(8) Other than in the main stream so as to not affect facility mission/generation.

(9) Used in conjunction with an approved tag installed at the point of isolation.

(10) Communicated thoroughly from beginning to end between the “Issuing Individual” and “Authorized Individual.”

b. Procedures:

(1) Determine if situation qualifies for a “Switching Permit.”

(2) Request permission (can be by telephone) from “Issuing Authority” to use “Switching Permit” in lieu of Safe Clearance. (Note: the “Issuing Individual” reserves the right to approve or disapprove the request.)

(3) The “Issuing Individual” will log the “Switching Permit” with appropriate information including time, purpose, and to whom it was issued.

(4) Based upon permission being granted, the “Authorized Individual” will place his approved tag at point of isolation and then perform the work.

(5) Upon completion of work, the “Authorized Individual” will inform the “Issuing Individual” that work is complete and that all equipment is back to normal. The “Issuing Individual” then makes the appropriate and final entry into the Station Log as released.

17. CLEARANCE PROCEDURE AND OUTSIDE EMPLOYERS (CONTRACTORS):

a. In situations where equipment installation, or modification is being performed by outside employers (contractors), the "Project Hazardous Energy Control Procedure" shall be the primary means of providing safety for the contractor's workmen. This protection may be provided to contractor's personnel through the Project's "Authorized Individual" (clearance holder).

b. Contractors Procedures:

(1) Contractor's hazardous energy control procedures may be applied to equipment which has not been placed under project jurisdiction. This may include temporary, newly installed, or existing permanent energy sources of any kind, including but not limited to, electrical, mechanical, pneumatic, hydraulic, or chemical.

(2) Contractor's personnel may, with the prior approval from the Power Project Manager, employ their own lockout/tagout devices to points of isolation which already are cleared out through the project's lockout/tagout procedure. The Contractor shall coordinate with the "Issuing Individual" before their tags are placed or removed. The Government's designated "Authorized Individual" shall witness when the Contractor places or removes their lockout/tagout devices to the already cleared equipment. The Contractor's lockout/tagout devices shall be last on, first off.

(3) The contractor's hazardous energy control procedure shall not inhibit or interfere with project procedures.

18. CLEARANCE VIOLATIONS:

a. Safe clearance procedures are for the safety and protection of personnel and equipment. It is vitally important that all personnel subject to the safe clearance procedure comply with the intent and scope of this regulation.

b. ER 385-1-31 paragraph 7e provides further guidance.

19. CAUTION ORDERS:

a. Caution Orders are issued to direct attention to abnormal, hazardous and unusual conditions or to special temporary operating instructions. Caution Orders provide protection for equipment only. IT SHALL NEVER BE USED TO PROVIDE PERSONAL PROTECTION. The caution order tag is to prevent or limit operation, or to provide other special instructions for equipment. The caution order tag NEVER signifies that the equipment is deenergized.

6 Jan 97

b. Each caution order shall be assigned a number, using an "X" as a prefix. Caution orders shall be numbered consecutively.

c. Caution orders may be requested by any "Authorized Individual." They shall be issued by the "Issuing Authority."

d. Caution orders will be logged in accordance with the procedures outlined for clearances using black or blue ink. The data entered for issue or release will conform to the data required for clearances.

e. A caution order sheet, ENG form 1928, will be prepared for each caution order issued. ENG form 1928 will be maintained as project record for at least 2 years.

f. Caution tags (yellow), ENG Form 1924, will be properly completed and attached to appropriate control devices and equipment. The tags will be protected from adverse conditions.

g. Caution orders shall be released and tags removed when unusual or abnormal conditions for a piece of equipment or device have been corrected, and special instructions are not required to protect the equipment.

h. No operation of equipment under Caution Order shall be done without the equipment operator's signature.

## 20. PERIODIC INSPECTIONS AND TRAINING:

a. At the beginning of each new year all outstanding clearances will be evaluated as to need.

b. Periodic/unannounced inspections to ensure that machinery or equipment are isolated and rendered inoperative shall be conducted.

c. Safe Clearance Training:

(1) All personnel employed in Savannah District powerhouses except office personnel and including Hydropower Section employees will receive training in safe clearance procedures during their first month of employment in the Savannah District and prior to supervising or working alone on any task. Retraining of employees will be given on an annual basis by 15 April.

(2) Training of employees in safe clearance procedures will be in accordance with applicable OSHA regulations, Savannah District Policy, SAD Hydroelectric Powerplant Trainee Manuals, General, Electrical, Mechanic and Operator, until such time that SAD-ET-CO-H issues additional guidance.

(3) Brief discussions of safe clearance procedures will be included in monthly safety meetings. Mention of such discussions will be included in reports of these meetings.

(4) Written reports of initial training and annual refresher training will be submitted through OP-SH to OP. Annual reports are due by 30 April and initial reports are due 6 weeks after a new employee reports to work.

(5) The Hydropower Section Chief is responsible to see that this training is carried out. The Hydropower Training Officer is responsible for administering the training.

(6) A copy of the most recent ER-385-1-31, EM 385-1-1, and this District Pamphlet will be provided to each affected employee.

5 Appendixes

Appendix A - Definitions

Appendix B - Sample Memorandums

Appendix C - Sample ENG Forms

Appendix D - Certificate of Training

Appendix E - Equipment Authorized

for Switching Permits

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APPENDIX A  
Definitions

1. Affected person - an employee whose job requires operation or use of a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires work in an area in which servicing or maintenance is being performed.
2. Authorized individual - a qualified person who is designated in writing by the responsible official to request, receive, and implement energy control procedures. The authorized individual shall have knowledge of the type, magnitude, and hazards of the energy involved and the methods to be used to control the energy.
3. Caution order - a procedure to direct cautious approach to abnormal conditions or equipment or to special operating instructions which are to be followed.
4. Caution Order Record, ENG Form 1928-R (see Appendix C) - records information pertinent to each caution order issued.
5. Caution Order Tag, ENG Form 1924 (see Appendix C) - a tag which is attached to equipment to implement the caution order procedure.
6. Clearance Holder - is the "Authorized Individual" to whom the clearance is issued and whose name appears on the "Safe Clearance Request, ENG Form 1927-R," and the "Danger - Do Not Operate Tag, ENG Form 1925."
7. Danger - Do Not Operate Tag, ENG Form 1925 (see Appendix C) - a tag for attaching to each operational control point of equipment or entry point to an area requiring a safe clearance. Computer-generated labels for attachment to these tags are authorized as long as the tag retains compliance with the requirements for tagout devices.
8. Electrical equipment - any device which produces, consumes, stores, transmits, or converts electrical energy.



DP 1130-2-23  
APP A  
6 Jan 97

9. Electrical line - any conductor used in the transmission of electrical energy from one point to another.

10. Energy isolation device - a physical device that prevents the transmission or release of energy. Includes, but is not limited to, manually operated circuit breakers, disconnect switches, slide gates, slip blinds, line valves, blocks, or similar devices, capable of blocking or isolating energy, with a position indicator. The term does not include push buttons, selector switches, and other control circuit-type devices.

11. Energy source - includes electrical, mechanical, hydraulic, pneumatic, chemical, thermal, nuclear, stored, or other energy.

12. Full personnel protection - when a tagout device is used in place of a lockout device, full personnel protection is provided when (1) the tagout device is attached at the same location as the lockout device would have been attached, (2) all tagout-related requirements of this regulation have been complied with, and (3) additional means have been taken to provide a level of safety commensurate with that of a lockout device. Such additional means include the removal of an isolating circuit element, blocking of a control switch, opening and tagging an extra (separated by distance) disconnecting device, or the removal of a valve handle to reduce the likelihood of energizing.

13. Group lockout and tagout - a lockout and tagout procedure used when servicing and/or maintenance is performed by a crew, craft, department or other group and which affords each employee a level of protection equivalent to that provided by the use of a personal lockout or tagout device.

14. Group lockbox - a device or apparatus used during group lockout into which keys from the lockout devices securing the machine or equipment are inserted and which is secured by personal locks by each primary authorized individual.

15. Hazardous energy control procedure (safe clearance procedure) - the written procedure which clearly and specifically identifies the hazardous energy sources and outlines the scope, purpose, responsibilities, and procedural steps for lockout and tagout and the requirements for testing the effectiveness of energy control measures to be utilized for the control of hazardous energy from stated sources.

16. Hazardous energy control program (safe clearance program) - the written program consisting of energy control procedures and personnel training. Personnel training shall be both initial and periodic. The purpose of the training is to ensure that the purposes and functions of the energy control program are understood by all affected personnel and to provide the knowledge and skills required for the safe application, usage, and removal of energy controls.

17. Isolation - an activity which physically prevents the transmission or release of energy.

18. Issuing individual - a person, qualified by their knowledge of the type and magnitude of the energy, the hazards involved, and the methods or means to control the energy, who is authorized by the responsible official to issue safe clearances. The issuing individual is a person with jurisdiction over an area or project, e.g., he may be the operator in charge of a shift at a powerhouse or substation, the supervisory engineer of a project or facility, or other supervisory person having operational control of systems to be placed under the hazardous energy control procedures.

19. Lockout - a form of hazardous energy control utilizing the placement of a locking device, in accordance with established procedures, on an energy isolating device to ensure that the energy isolating device and the system being controlled cannot be operated or release energy until the lockout device is removed.

DP 1130-2-23  
APP A  
6 Jan 97

20. Lockout device - a device that utilizes a positive means, such as a key lock, to hold an energy isolating device in the safe position and prevent the energizing of a system.

21. Master tag - a document used for group lockout and tagout which each member of a crew, craft, or other group signs to provide worker accountability. The master tag shall be used to indicate that the employees working under a group safe clearance have read the hazardous energy control procedures and understand the limits of the clearance and fully comprehend the details of the job and the energy isolation devices actuated or put in place. The master tag may take the form of a safe clearance request form, clearance holder fact sheet, main hold card, work permit, or similar document that provides worker accountability.

22. Personal Grounds/Jumpers - Grounds that are used to discharge static before applying "Temporary Protective Grounds" such as in the case of static discharge sticks (shepherds' hook), testing grounds (grounds temporarily applied to facilitate testing or discharge capacitive buildup from testing), or grounds used as jumpers to facilitate testing. These grounds do not necessarily conform to the ANSI C2, National Electrical Safety Code.

23. Pressure systems - all piping, tubing, valves, controls, and other devices which operate or are maintained above atmospheric pressure. Also, see definition of vacuum systems.

24. Project - All U.S. Army Corps of Engineers land, property and facilities on the project property.

25. Temporary Protective Grounds - Grounds that are placed for clearance purposes after the clearance is issued and removed prior to release of the clearance.

26. Principal authorized individual - an authorized individual who oversees or leads a crew, craft, or other group of workers during group lockout and tagout.

The "Principle Authorized Individual" is the "Clearance Holder."

27. Responsible official - the person in charge of the project or facility who designates the issuing and authorized individuals and who approves and directs the hazardous energy control program. The "Responsible Official" is a person with jurisdiction over an area or project e.g. He may be the Power Project Manager in charge of a powerhouse or substation.

28. Restricted area - any area where hazardous conditions exist or have potential to exist, such as inside electrical vaults or tanks with potentially contaminated atmospheres.

29. Safe clearance - a definite operating arrangement whereby an authorized individual, acting individually or as a representative of a crew, removes designated equipment from service by lockout or tagout. A device or point under safe clearance does not necessarily indicate a zero energy state at that device or point.

30. When issued, the safe clearance is the authorization to perform specified work in accordance with the limits of the safe clearance. Safe clearance involves the following general steps:

- 1 - request for safe clearance by an authorized individual
- 2 - accomplish requirements for safe clearance (isolation, guarding, grounding)
- 3 - safe clearance issued
- 4 - perform work
- 5 - clear work area of tools and workers
- 6 - release of safe clearance requested
- 7 - release safe clearance and return equipment to service

31. Safe clearance procedure/program - same as hazardous energy control procedure/program.

32. Safe Clearance Request, ENG Form 1927-R (see Appendix C) - a form on which requests for safe clearances, safe clearance releases, and all other pertinent data in connection with safe clearances is maintained.

DP 1130-2-23  
APP A  
6 Jan 97

Computer-generated facsimiles are authorized.

33. Stored energy - energy (electrical, mechanical, chemical or gases) that might be found in a charged capacitor, a loaded spring, chemical solutions, or pressurized vessel. Potential energy is stored energy.

34. Switching Order - That portion of the hazardous energy control procedure that contains specific instructions in a particular order for safe logical switching, valving, or other operational steps needed in preparing equipment for a safe clearance.

35. Switching Permit - an authorization to perform work on certain equipment without a safe clearance as designated by the responsible official (see Appendix B).

36. System - includes machinery, equipment, and electrical, hydraulic, and pneumatic lines and their subsystems.

37. Tagout - a form of hazardous energy control procedure utilizing the placement of a tag on an energy isolating point, in accordance with established hazardous energy control procedures, to indicate that the energy isolating point and the equipment being controlled may not be operated until the tag is removed or a temporary lift is performed.

38. Tagout device - a prominent warning device, such as a tag with a means of attachment, which can be securely attached to an energy isolating device in accordance with established procedures to indicate that the energy isolating device and system being controlled may not be operated until the tagout device is removed.

39. Temporary removal (temporary lift) - the authorized act of working on or operating equipment while it is energized and with the removal of hazardous energy control devices.

DP 1130-2-23  
APP A  
6 Jan 97

Temporary lifts must be explicitly detailed in the safe clearance request form and have authorization of the responsible and issuing individuals.

40. Vacuum systems - all piping, tanks, tubing, valves, controls, and other devices which operate or are maintained below atmospheric pressure.

DP 1130-2-23  
APP B  
6 Jan 97

APPENDIX B

OFFICE SYMBOL (MARKS #)

DATE SIGNED

MEMORANDUM FOR All Team Members

SUBJECT: Clearance Authorizing Authority, Hartwell Powerplant

1. Reference: Safe Clearance Procedure, ER 385-1-31 and SAD Uniform Interpretation.

2. Clearances must be authorized by one of the persons listed in paragraph 2d before a clearance is issued. The area of authorization will include Hartwell powerplant, dam, switchyard, and Clemson Pumping Station.

a. For a clearance on equipment that affects the generation schedule contact the undersigned or Virgil G. Hobbs, Chief of Hydropower Section.

b. If an emergency exists, the Powerplant Shift Operator on duty may authorize a clearance.

c. For a clearance on equipment that does not affect the generation schedule, contact the undersigned for authorization. If the undersigned is not available, the Powerplant Shift Operator on duty may authorize the clearance.

d. The following persons may authorize a clearance:

<u>NAME</u>	<u>POSITION</u>	<u>TYPE CLEARANCE</u>
David M. Lee	Power Project Manager	ALL
William P. Bowman	Powerplant Shift Operator	ALL

DP 1130-2-23  
APP B  
6 Jan 97

Aaron W. Cox	Powerplant Shift Operator	ALL
John M. East	Powerplant Shift Operator	ALL

3. This memorandum supersedes CESAS-OP-H memorandum, 4 Aug 95,  
subject: Clearance Authority, Hartwell Powerplant.

SIGNATURE BLOCK

SAMPLE AUTHORIZING AUTHORITY MEMORANDUM



DP 1130-2-23  
APP B  
6 Jan 97

OFFICE SYMBOL (MARKS #)

DATE SIGNED

MEMORANDUM FOR OP-H (All Team Members)

SUBJECT: Hartwell Powerplant Personnel Authorized to Issue a Clearance

1. Reference: Safe Clearance Procedure, ER 385-1-31 and SAD Uniform Interpretation.
2. Clearances will be issued by Hartwell Powerplant Shift Operator on duty in accordance with references above.
3. The following team members are authorized to issue a clearance:

<u>NAME</u>	<u>POSITION</u>	<u>TYPE CLEARANCE</u>
William P. Bowman	Powerplant Shift Operator	ALL
Aaron W. Cox	Powerplant Shift Operator	ALL

4. If you have questions or suggestions, please ask or comment. Your cooperation will be appreciated. Please initial and date page 2 indicating you have read this memorandum.
5. This memorandum superseded CESAS-OP-H memorandum, 4 Aug 95, subject: Hartwell Powerplant Personnel Authorized to Issue a Clearance.

SIGNATURE BLOCK

SAMPLE MEMORANDUM PERSONNEL AUTHORIZED TO ISSUE A CLEARANCE

DP 1130-2-23  
APP B  
6 Jan 97

OFFICE SYMBOL (MARKS #)

DATE SIGNED

MEMORANDUM FOR All Team Members

SUBJECT: Hydropower Section Team Members Authorized to Receive a Clearance

1. References:

a. OP-H memorandum, 2 Oct 95, subject: Hartwell Powerplant Personnel Authorized to Receive a Clearance; para. 5 (enclosure 1).

b. OP-SH memorandum, 5 Jan 96, subject: Request Update of Project Clearance List (enclosure 2).

2. In accordance with para 5 of reference (a) above, the following Hydropower Section team members are authorized to receive clearances:

<u>NAME</u>	<u>POSITION</u>	<u>TYPE CLEARANCE</u>
Gregory S. Hopkins	Electrical Engr	Electrical
William J. Palmer	Electrical Engr	Electrical

3. If you have question or suggestions, please ask or comment. Your cooperation will be appreciated. Please initial and date on page 2, indicating you have read this memorandum.

2 Encls

SIGNATURE BLOCK

CF:  
OP-SH (Hobbs)  
Union Vice President

SAMPLE MEMORANDUM TEAM MEMBERS AUTHORIZED TO RECEIVE A CLEARANCE

DP 1130-2-23  
APP B  
6 Jan 97

OFFICE SYMBOL (MARKS #)

DATE SIGNED

MEMORANDUM FOR All Team Members

SUBJECT: Hartwell Powerplant Personnel Authorized to Receive a Clearance

1. References: Safe Clearance Procedure, ER 385-1-31 and SAD Uniform Interpretation.

2. The following team members are authorized to receive a clearance:

<u>NAME</u>	<u>POSITION</u>	<u>TYPE CLEARANCE</u>
Max C. Hayes	Powerplant Elec. A	Electrical
William S. Reese	Powerplant Elec. A	Electrical
William O. Hilton	Powerplant Sr. Mech	Mechanical

3. Normally, Senior level personnel, including Powerplant Shift Operators, will hold all clearances. The "A" level personnel are authorized to hold a clearance only in the absence of the Senior and shall be designated as "Acting Senior" for their section. Deviation from this policy shall require my authorization.

4. Normally, line clearances will be issued to the Powerplant Shift Operator. The Powerplant Senior Electrician may be issued this type clearance.

5. Hydropower Test Section personnel are authorized to hold a clearance only if the clearance requested by them is already in force by one of the persons listed above.

DP 1130-2-23  
APP B  
6 Jan 97

6. If you have questions or suggestions, please ask or comment. Your cooperation will be appreciated. Please initial and date the following page indicating you have read this memorandum.

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SAMPLE MEMORANDUM PERSONNEL AUTHORIZED TO RECEIVE A CLEARANCE

APPENDIX D  
**CERTIFICATE OF TRAINING**  
*for*

*Team Member:* \_\_\_\_\_

*Project:* \_\_\_\_\_

*Date:* \_\_\_\_\_

***Safe Clearance Procedures - ER-385-1-31 - Lockout/Tagout***

*This is to certify that I have attended the above training program which has informed me of the following:*

- \* Current policy and procedures to perform Lockout/Tagout responsibilities.
- \* Purpose of Lockout/Tagout requirements.
- \* Various locks used by the company.
- \* Tagout products and how they are used.
- \* Review of specific equipment and areas of concern.
- \* Reasons to use Lockout/Tagout Equipment.
  - a) *Repair/replacement work*
  - b) *Renovation/Rehab work*
  - c) *Modification or other adjustments to energy equipment*
- \* *Familiarization with the energy sources, hazardous and non-hazardous.*
  - a) *Electrical*
  - b) *Mechanical*
  - c) *Pneumatic*
  - d) *Hydraulic*
  - e) *Thermal*
  - f) *Water under pressure*
  - g) *Fluids & Gases*
  - h) *Gravity*
- \* *Multiple energy sources*
- \* *Discussed safety precautions to prevent accidental start-ups, electrical shock, disabling injuries and death.*
- \* *Safe restoration of energy sources*
- \* *Sources that cannot be locked out.*

*Date:* \_\_\_\_\_ *Employee's Signature* \_\_\_\_\_

*Date:* \_\_\_\_\_ *Trainer's Signature* \_\_\_\_\_

DP 1130-2-23  
APP E  
6 Jan 97

Appendix E  
Equipment Authorized for Switching Permits

As authorized by paragraph 5.j. of ER 385-1-31 the following equipment may be operated or removed from service without a Safe Clearance under the switching permit provisions of this hazardous energy control program. The list for each powerplant may be site specific.

- \* Lighting Circuits and Receptacles
- \* Air Compressors
- \* Heating and Cooling Systems
- \* Lift Stations - Sewage Treatment Equipment
- \* Project Elevators
- \* Drainage Pumps
- \* Lube Oil Trans. Pumps and Purifiers
- \* Unwatering Pumps
- \* Sluice Gate Pumps
- \* Unit Grease Systems
- \* Code Call Systems
- \* Project Cranes
- \* Equipment - Electric Shop
- \* Equipment - Mechanic Shop
- \* Outlet Circuits 480VAC
- \* Ventilation Fans
- \* Battery Chargers
- \* Parking Lot Automatic-Drive Gates